U.S. Department
of Transportation
Federal Highway Administration

National Bridge Inventory Information System

METRIC CONVERSION PROGRAM

Office of Bridge Technology

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1.0 METRIC CONVERSION

1.1 Overview

This document is to be used to run the a special metric conversion program for states that still have not converted their systems to metric. This conversion program (LE21M08A) uses a 416-character record comprised of the following:

(1) The first 400 characters come from the 1988 Coding Guide record layout.

(2) The last 16 characters are the five items that were added to the 1995 (metric) Coding Guide. These are items 12, 13, 63, 65, and 105.

The first version of the conversion program (LE21M05A) would convert a 400-character file into the new 432 character file, and initialize the five new items to spaces while doing so.

This version of the conversion program converts all the items the same way, and carries over the five new items. This way, states that are coding the new items, but have not yet fully converted to metric, will not have the new items blanked out each time.

One additional change in this new conversion program is that item 11 (Milepoint in English, Kilopoint in metric), is converted from miles to kilometers. The previous version of the conversion initialized item 11 to spaces.

This package contains the conversion program COBOL source code along with the Job Control Language (JCL) statements needed to run the program. A sample JCL stream is included in the enclosed mini-tape or floppy and in Appendix A.

1.2 Items Changed By 1995 Coding Guide

The majority of items changed by the 1995 Coding Guide were units of measure. These items were converted from English units to metric. In addition to these changes, five new items were added, two were deleted, and the coding for some existing items changed.

Unit of Measure Items

These items were converted to metric using the following conversion factors:

multiply feet (FT) by .3048 for meters (M)
multiply miles (MI) by 1.609 for kilometers (K)
multiply tons (TONS) by .9 for metric tons (MTONS)

Any of these items that had a value of all 9's before will still have a value of all 9's in the new metric record. The one exception to this rule is item 19, which will be converted from 99 to 199.

	Item 10 -	from	XX FT XX IN	to	XX.XX M
	Item 11 -	from	XXX.XXX MI	to	XXXX.XXX K
	Item 19 -	from	XX MI	to	XXX K
	Item 32 -	from	XXX FT	to	XXX.X M
*	Item 39 -	from	XXX FT	to	XXX.X M
*	Item 40 -	from	XXXX FT	to	XXXX.X M
*	Item 47 -	from	XX.X FT	to	XX.X M
	Item 48 -	from	XXXX FT	to	XXXX.X M
	Item 49 -	froom	XXXXXX FT	to	XXXXX.X M
	Item 50A	-	from XX.X FT	to	XX.X M
	Item 50B	-	from XX.X FT	to	XX.X M
	Item 51 -	from	XXX.X FT	to	XXX.X M
	Item 52 -	from	XXX.X FT	to	XXX.X M
	Item 53 -	from	XX FT XX IN	to	XX.XX M
	Item 54B	-	from XX FT XX IN	to	XX.XX M
	Item 55B	-	from XX.X FT	to	XX.X M
	Item 56 -	from	XX.X FT	to	XX.X M
	Item 64 -	from	XX TONS	to	XX.X MTONS
	Item 66 -	from	XX TONS	to	XX.X MTONS
	Item 76 -	from	XXXXXX FT	to	XXXXX.X M
*	Item 116	-	from XXX FT	to	XXX.X M

*** These vertical clearances were rounded down. All other items were rounded using standard rounding procedures.**

Items Deleted

Item 64A Item 66A

1.3 Special Conversion Rules for Item 66 (Inventory Rating)

Before the Inventory Rating (OLD-ITEM-66B) can be converted from English tons to metric tons, the rating must first be adjusted to account for the Type of Loading (OLD-ITEM-66A). This is done using the same multipliers listed in the English Coding Guide on page 44 under the explanation for Structural Evaluation. The rules for calculating the metric Inventory Rating (NEW-ITEM-66) are shown below:

If the OLD-ITEM-66A equals 1 (H Loading);

the NEW-ITEM-66 = (OLD-ITEM-66B * 1.25) * .9

If the OLD-ITEM-66A equals 3 (Alternate Interstate Loading);

the NEW-ITEM-66 = (OLD-ITEM-66B * 1.20) * .9

If the OLD-ITEM-66A equals 5 (Type 3-S2 Unit);

the NEW-ITEM-66 = (OLD-ITEM-66B * .70) * .9

If the OLD-ITEM-66A equals 6 (Type 3-3 Unit);

the NEW-ITEM-66 = (OLD-ITEM-66B * .64) * .9

If the OLD-ITEM-66A equals any other value not listed above;

the NEW-ITEM-66 = OLD-ITEM-66B * .9

1.4 Computed Items

Items 67, 68, 69, Deduct, Status, and Sufficiency Rating were not recomputed by the conversion program. The Edit/Update program will recompute these items.

2.0 USING THE PC VERSION OF THE CONVERSION PROGRAM

The Edit/Update conversion can be run on the PC. When this is done, a master file residing on your PC or network is used as input. The output file would then be fed into the PC version of the Edit/Update program (see manual "Edit/Update Program").

2.1 Installing the Conversion Program on the PC

The PC version of the conversion program and the PC version of the Edit/Update program are to be installed simultaneously. See the "Edit/Update Program" manual.

The input file for the conversion program will need to be created. This will be your 416-character English file. The file should be in your **C:\BRIDGE**\ subdirectory with the name **CVINPUT.DAT**. This file should be sorted by State Code, Structure Number, then ITEM 5A.

2.2 Files Used by the Conversion Program

The following files on the high-density 3 1/2" floppy diskette are used for the conversion:

(1) LE21M08A.EXE - The conversion program. Just type **CONV416** to execute.

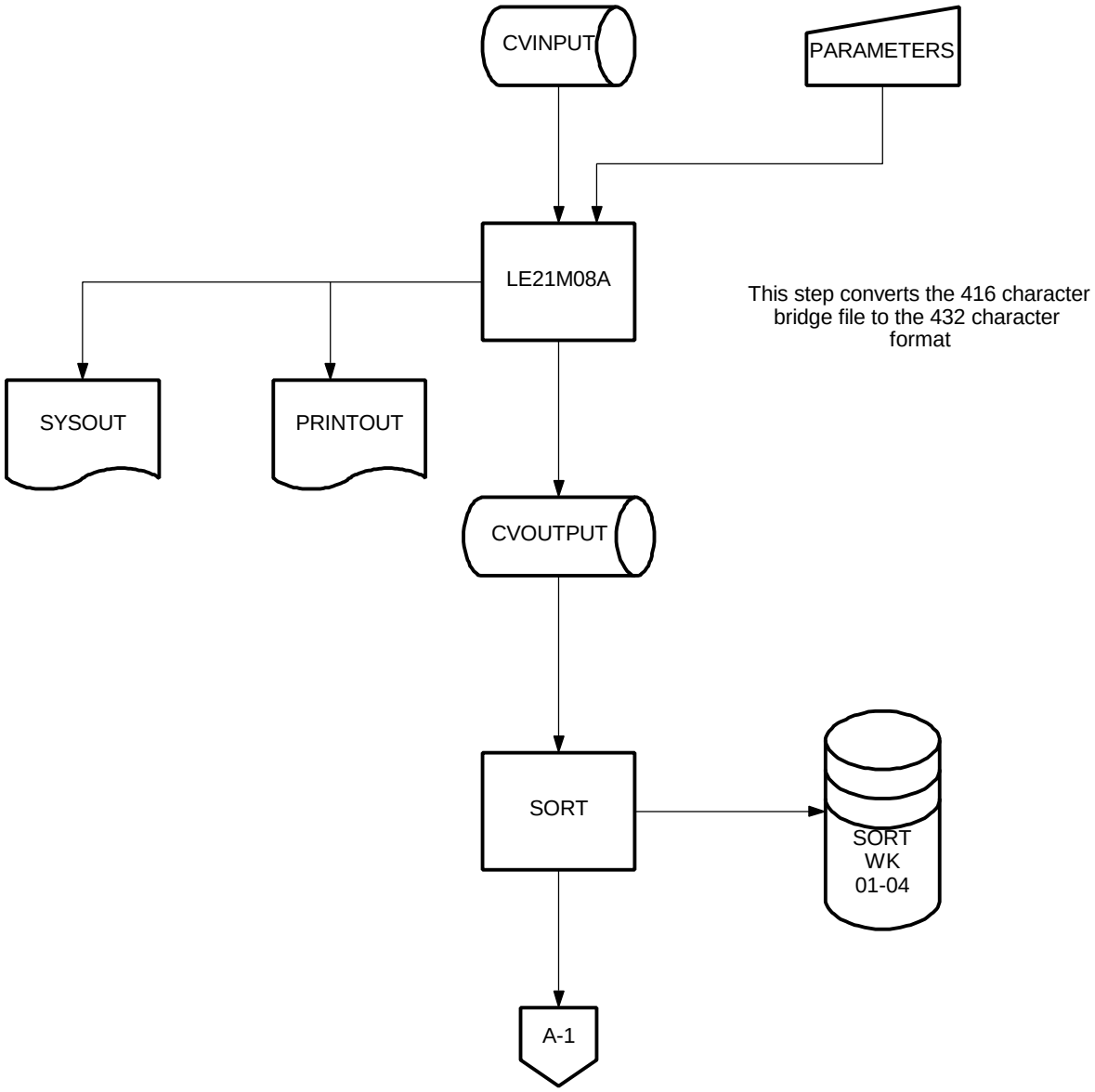
(2) CONV416.BAT - The batch file for running the conversion program.

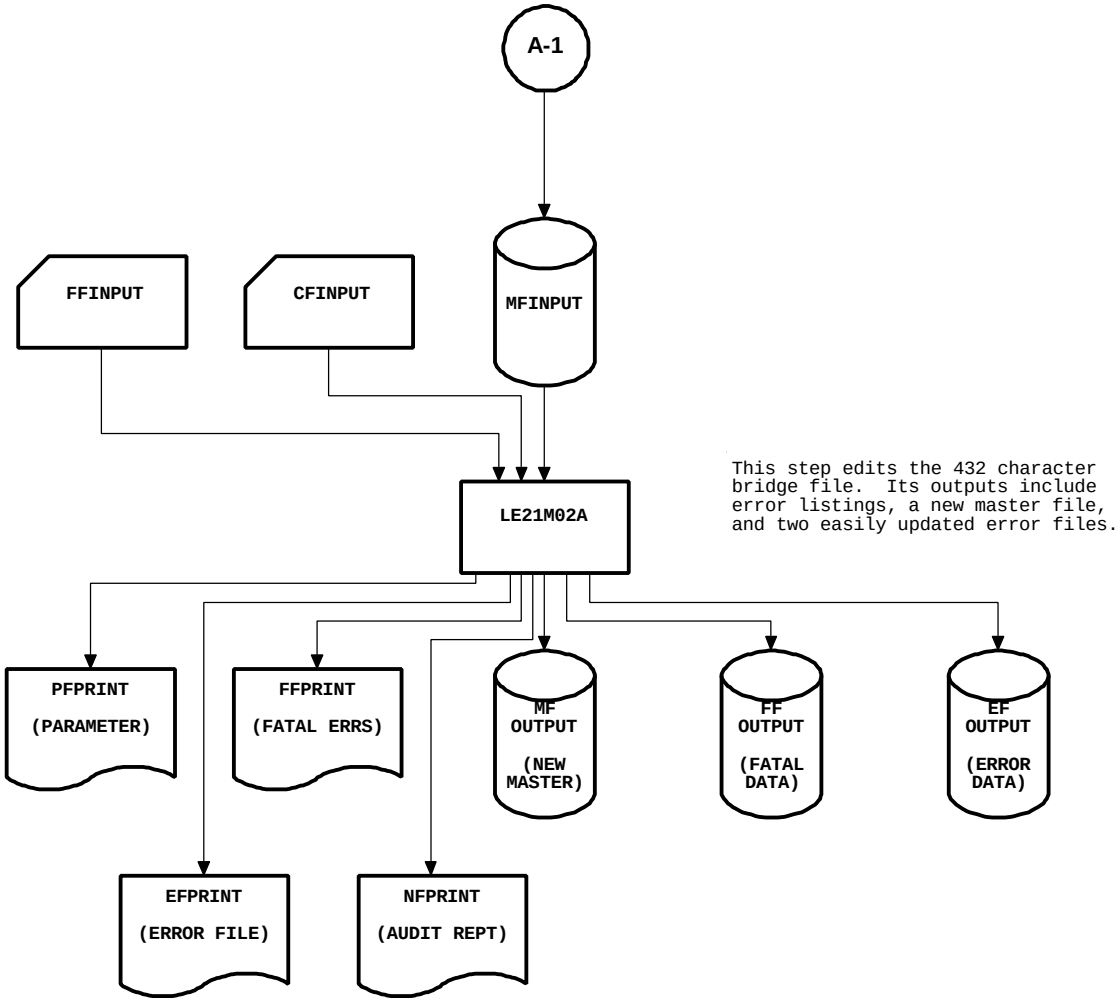
The following file is output from the conversion program.

(1) MFINPUT.DAT - The output master file. This file would be input to the Edit/Update program.

APPENDIX A

LE21JOBA


CVINPUT
PARAMETERS
LE21M08A
This step converts the 416 character bridge file to the 432 character format
SYSOUT
PRINTOUT
CVOUTPUT
SORT
SORT WK 01-04
A-1


A-1
FFINPUT
CFINPUT
MFINPUT
LE21M02A
This step edits the 432 character bridge file. Its outputs include error listings, a new master file, and two easily updated error files.
PFPRINT
(PARAMETER)
FFPRINT
(FATAL ERRS)
MF
OUTPUT
(NEW
MASTER)
FF
OUTPUT
(FATAL
DATA)
EF
OUTPUT
(ERROR
DATA)
EFPRINT
(ERROR FILE)
NFPRINT
(AUDIT REPT)

APPENDIX B

The following is the JCL used to run the conversion, a sort, and the first run of the Edit/Update.

LE21JOBA

```
//LE21M08A JOB (LE21,BN53),DUNN,CLASS=X,MSGCLASS=T,TIME=1,
//           PRTY=6,NOTIFY=$
/*JOBPARM LINES=2000
//LE21M08A  EXEC  PGM=LE21M08A,PARM='nnnnn',REGION=0K,TIME=1
//STEPLIB  DD  DSN=your.loadlib,DISP=SHR
//CVINPUT  DD  DISP=SHR,UNIT=DISK,DSN=english.master
//CVOUTPUT DD  DSN=metric.master,DISP=(NEW,CATLG,DELETE),
//           SPACE=(CYL,(10,10),RLSE),
//           UNIT=DISK,DCB=(RECFM=FB,LRECL=432,BLKSIZE=8640)
//PRINTOUT DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//SYSDBOUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
/*

//* SORT THE 432 CHARACTER FILE TO ENSURE MASTER FILE IN
//* ASCENDING ORDER BY ITEM1, ITEM8, ITEM5A

//STEP2    EXEC PGM=SORT,REGION=1024K
//SORTIN   DD  DSN=metric.master,DISP=(OLD,DELETE,DELETE)
//SORTOUT  DD  DSN=sorted.metric.master,UNIT=DISK,
//           DCB=(LRECL=432,BLKSIZE=8640,RECFM=FB),
//           SPACE=(CYL,(5,5),RLSE),
//           DISP=(NEW,CATLG,CATLG)
//SORTWK01 DD  DSN=&&WRKAWORK,UNIT=SYSDA,
//           SPACE=(CYL,(10,5))
//SORTWK02 DD  DSN=&&WRKBWORK,UNIT=SYSDA,
//           SPACE=(CYL,(10,5))
//SORTWK03 DD  DSN=&&WRKCWORK,UNIT=SYSDA,
//           SPACE=(CYL,(10,5))
//SORTWK04 DD  DSN=&&WRKDWORK,UNIT=SYSDA,
//           SPACE=(CYL,(10,5))
//SYSOUT   DD  SYSOUT=*
//SYSIN    DD  *
  SORT FIELDS=(1,19,CH,A)
/*
```

```
//* STEP3 EDITS THE CONVERTED MASTER FILE.  IT OUTPUTS ERROR
//* REPORTS, AND 80 BYTE RECORDS WHICH CAN BE MANUALLY UPDATED
//* AND PROCESSED THRU LE21JOBB.

//STEP3    EXEC PGM=LE21M02A,REGION=1200K,TIME=3
//STEPLIB  DD  DSN=your.loadlib,DISP=SHR
//CFINPUT  DD  *
    DELIMITER        ITEM      ;
    DELIMITER DATA     END       \
    DELIMITER DATA     START     \
    DELIMITER RECORD   END       :
    TYPE     OF      EDIT      ITEM
    TYPE     OF      EDIT      C
    LINES    PER     PAGE      53
    ERRORS   PER     REPORT    99999
    STATE            CODE      ??
//FFINPUT  DD  *
I 66
//MFINPUT  DD  DSN=sorted.metric.master,DISP=SHR
//MFOUTPUT DD  DSN=bridge.master,UNIT=DISK,
//           DISP=(NEW,CATLG,DELETE),SPACE=(CYL,(5,5),RLSE),
//           DCB=(RECFM=FB,LRECL=432,BLKSIZE=8640)
//FFOUTPUT DD  DSN=fatal.data.bridge.file,UNIT=DISK,
//           DISP=(NEW,CATLG,DELETE),SPACE=(TRK,(5,5),RLSE),
//           DCB=(RECFM=FB,LRECL=80,BLKSIZE=4000)
//EFOUTPUT DD  DSN=error.data.bridge.file,UNIT=DISK,
//           DISP=(NEW,CATLG,DELETE),SPACE=(CYL,(5,5),RLSE),
//           DCB=(RECFM=FB,LRECL=80,BLKSIZE=4000)
//PFPRINT  DD  SYSOUT=*
//FFPRINT  DD  SYSOUT=*
//EFPRINT  DD  SYSOUT=*
//NFPRINT  DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//SYSDBOUT DD  SYSOUT=*
//
```

where:

nnnnn	Enter a five-digit number with leading zeroes to specify how many records to print before and after images of (one record per page). EX: 00100 will print the first 100 records. 99999 will print all records.
your.loadlib	Load library used where conversion programs are compiled and, optionally, any additional load libraries necessary for the site.

english.master	DSN of 416-character english master to be converted.
metric.master	DSN of 432-character bridge master after being converted.
sorted.metric.master	DSN of 432-character bridge master after being sorted.
delimiter.item.char	Tells program where the next ITEM information is.
delimiter.data.end.char **delimiter.data.start.char**	Tells program where actual value for an ITEM begins and ends. Start character can be the same or different. Recommendation is to use \ for both.
delimiter.record.end	Tells program where the next record begins.
type.of.edit	Specify which type of edits to run. The four (4) types of runs are: ITEM (or I) for individual item edits. CROSSCHECK (or C) for crosscheck edits. REASONABLENESS (or R) for only reasonableness edits. FINAL (or F) to combine all types of edits. This option should be used before sending tape to Washington Headquarters Office. **NOTE:** More than one TYPE OF EDIT card may be submitted for a run. For ITEM and CROSSCHECK edits can be performed and omitting REASONABLENESS edits. Code one type.of.edit per card.
lines.per.page.nbr	Maximum number of printed lines per page for error listing reports.

errors.per.report.nbr	Maximum number of errors allowed on a run. If this number is exceeded, the edit program will stop running. To view all errors, code 99999.
state.code	Two (2) digit State code. Use 99 for multiple States.
bypass.item.numbers	Tells edit program which items **not** to edit. Specify by coding "I" followed by a blank, then the ITEM NUMBER. Code one ITEM per card.
bridge.master	New, 432-character master output from edit program.
fatal.data.bridge.file	Error file containing records with fatal errors, i.e., those involving ITEM 1, ITEM 8, or ITEM 5A.
error.data.bridge.file	Error file containing records with non-fatal errors.

APPENDIX C

STATE/REGION: 999 STRUCTURE NUMBER: 0001 ITEM 5A: 1
FEATURES INTERSECTED : STATE ROUTE 90
FACILITY CARRIED : INTERSTATE 1
LOCATION : 0.3 KM EAST OF RT 111

OLD ITEM 10 : 99 FEET 99 INCHES	NEW ITEM 10 : 99.99 METERS
OLD ITEM 11 : 000.000 MILES	NEW ITEM 11 : 0000.000 KILOMETERS
OLD ITEM 12 :	NEW ITEM 12 :
OLD ITEM 13 :	NEW ITEM 13 :
OLD ITEM 16 : 38 DEG 55.8 MIN	NEW ITEM 16 : 38 DEG 55 MIN 48.00 SEC
OLD ITEM 17 : 077 DEG 06.9 MIN	NEW ITEM 17 : 077 DEG 06 MIN 54.00 SEC
OLD ITEM 19 : 10 MILES	NEW ITEM 19 : 016 KILOMETERS
OLD ITEM 30 : 92	NEW ITEM 30 : 1992
OLD ITEM 32 : 035 FEET	NEW ITEM 32 : 010.7 METERS
OLD ITEM 39 : 000 FEET	NEW ITEM 39 : 000.0 METERS
OLD ITEM 40 : 0000 FEET	NEW ITEM 40 : 0000.0 METERS
OLD ITEM 47 : 30.0 FEET	NEW ITEM 47 : 09.1 METERS
OLD ITEM 48 : 0172 FEET	NEW ITEM 48 : 0052.4 METERS
OLD ITEM 49 : 001355 FEET	NEW ITEM 49 : 00413.0 METERS
OLD ITEM 50A : 07.0 FEET	NEW ITEM 50A : 02.1 METERS
OLD ITEM 50B : 00.0 FEET	NEW ITEM 50B : 00.0 METERS
OLD ITEM 51 : 035.0 FEET	NEW ITEM 51 : 010.7 METERS
OLD ITEM 52 : 044.5 FEET	NEW ITEM 52 : 013.6 METERS
OLD ITEM 53 : 99 FEET 99 INCHES	NEW ITEM 53 : 99.99 METERS
OLD ITEM 54B : 00 FEET 00 INCHES	NEW ITEM 54B : 00.00 METERS
OLD ITEM 55B : 00.0 FEET	NEW ITEM 55B : 00.0 METERS
OLD ITEM 56 : 99.9 FEET	NEW ITEM 56 : 99.9 METERS
OLD ITEM 63 :	NEW ITEM 63 :
OLD ITEM 64A : 5	NEW ITEM 64A : (NO LONGER EXISTS)
OLD ITEM 64B : 36 TONS	NEW ITEM 64 : 32.4 METRIC TONS
OLD ITEM 65 :	NEW ITEM 65 :
OLD ITEM 66A : 5	NEW ITEM 66A : (NO LONGER EXISTS)
OLD ITEM 66B : 36 TONS	NEW ITEM 66 : 22.7 METRIC TONS
OLD ITEM 76 : 000500 FEET	NEW ITEM 76 : 00152.4 METERS
OLD ITEM 97 : 94	NEW ITEM 97 : 1994
OLD ITEM 105 :	NEW ITEM 105 :
OLD ITEM 115 : 12	NEW ITEM 115 : 2012
OLD ITEM 116 : 000 FEET	NEW ITEM 116 : 000.0 METERS